

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 02-017634
(43)Date of publication of application : 22.01.1990

(51)Int.Cl. H01L 21/225

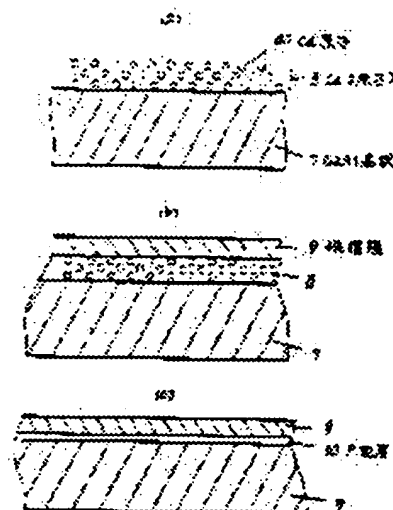
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(54) METHOD OF DOPING IMPURITY TO SEMICONDUCTOR

(57)Abstract:

PURPOSE: To make it possible to obtain an impurity added layer which is extremely thin of 500 \AA or less with excellent control by having an LB film deposition process, an organic substance removal process, and an impurity diffusion process.

CONSTITUTION: In the first process, a desired number of LB films containing Cd atom 40 which serves as a dopant are deposited on the surface of a GaAs substrate 7 by a Langmuir-Blodgett's technique. After passing through the second process in which the three molecular layers on the substrate 7 thus obtained are processed in O₂ plasma, hydrogen carbonate chains of hydrophobic group are removed. Thus, an atomic layer 8 composed of Cd atom 40 can be formed on the substrate 7. In the third process, after forming a protective layer 9 made of SiO₂, an insulation film such as SiO₂ or SiN, etc., or a high-melting point metal layer such as WSi on the atomic layer 8, it is annealed in high temperatures and a p-type layer 10 of Cd diffusion is formed. Since the p-type layer 10 thus obtained is formed from impurity atoms of several atom layers, an extremely thin film of 500 \AA or thinner can be formed.



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[Date of request for examination]
[Date of sending the examiner's decision of rejection]
[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]
[Date of final disposal for application]
[Patent number]
[Date of registration]
[Number of appeal against examiner's decision of rejection]
[Date of requesting appeal against examiner's decision of rejection]
[Date of extinction of right]